

Claims

1. An implantable microfabricated sensor device for measuring a physiologic parameter of interest within a patient, said sensor comprising:

a substrate;

a sensor integrally formed with said substrate and being responsive to the physiologic parameter;

at least one conductive paths integrally formed with said substrate and said sensor; and

active circuitry in close proximity to said sensor and electrically connected to said sensor by said conductive path.

2. The sensor device of claim 1 wherein said sensor is a capacitive sensor having a fixed electrode and a moveable electrode.

3. The sensor device of claim 2 wherein said fixed electrode is formed as a conductive layer on said substrate.

4. The sensor device of claim 1 wherein said sensor is at least partially formed of a cap layer on said substrate.

5. The sensor device of claim 4 wherein said cap layer includes portions defining a diaphragm of said sensor.

6. The sensor device of claim 4 wherein said active circuitry is integrally fabricated with said sensor.

7. The sensor device of claim 4 wherein said cap layer is formed of monocrystalline silicon.

8. The sensor device of claim 4 wherein said cap layer is boron doped silicon.

9. The sensor device of claim 2 wherein said fixed and moveable electrodes define an interior volume therebetween and portion of said substrate define a displacement cavity in communication with said interior volume.

10. The sensor device of claim 2 wherein said fixed electrode includes a main electrode and at least one reference electrode.

11. The sensor device of claim 1 wherein said sensing device is monolithic.

12. The sensor device of claim 1 further comprising a cap layer formed over said substrate.

13. The sensor device of claim 12 wherein said cap layer includes a portion defining a moveable electrode of said sensor.

14. The sensor device of claim 12 wherein said cap layer is conductive.

15. The sensor device of claim 12 wherein said cap layer is doped silicon.

16. The sensor device of claim 1 wherein said sensor is a pressure sensor.

17. The sensor device of claim 1 wherein said sensor is a temperature sensor.

18. The sensor device of claim 1 wherein said sensor is a chemical sensor.

19. The sensor device of claim 1 wherein said active circuitry is integrally formed within a cap layer over said substrate.

20. The sensor device of claim 1 wherein said active circuitry is integrally formed with said substrate.

21. The sensor device of claim 1 wherein said active circuitry is mounted to said substrate.

22. The sensor device of claim 21 wherein said active circuitry is received within a recess defined in said substrate.

23. The sensor device of claim 1 further comprising at least two sensors.

24. The sensor device of claim 23 wherein said two sensors sense the same physiologic parameter.

25. The sensor device of claim 23 wherein said two sensors sense different physiologic parameters.

26. The sensor device of claim 1 wherein said sensor is a capacitive sensor having a fixed electrode and a moveable electrode, said fixed and moveable electrodes being electrically coupled by first and second conductive paths to said active circuitry, said first and second paths being electrically isolated from one another.

27. The sensor device of claim 26 wherein said paths are isolated by a dielectric layer therebetween.

28. The sensor device of claim 26 wherein said paths are isolated by a p-n junction structure.

29. The sensor device of claim 26 wherein said capacitive sensor operates in a proximity mode.

30. The sensor device of claim 26 wherein said capacitive sensor operates in a touch mode.

31. The sensor device of claim 1 further comprising a bioinert coating over a majority of exterior surfaces of said sensor.

32. The sensor device of claim 1 further comprising a housing defining form factor providing an external shape to said sensing device.

33. The sensor device of claim 32 wherein said housing is of a non-rigid material.

34. The sensor device of claim 32 wherein said housing is of plastic.

35. The sensor device of claim 32 wherein said housing is soft.